

Identification of Occupational Health Hazards and Assessment of Intervention Strategies in Working Environment in Minna, Niger State, Nigeria

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ABSTRACT

Occupational hazards present a major public health problem resulting in serious social and economic consequences that could be prevented if appropriate measures are taken. The focus of this paper is the identification of occupational health hazards and assessment of intervening strategies in the working environment in Minna metropolis of Niger state, Nigeria. Specific objectives are to ascertain the prevalence of occupational health hazards, to identify occupational health hazards common among workers in the small, medium, and large enterprises, and to assess the intervention strategies put in place by the management of such enterprises in addressing such hazards. This is necessitated given that the study of this kind is scarce in the area. Hence there is a felt need to carry out this research. Arising from this, the cross-sectional design was adopted with the use of a questionnaire as the main instrument for data collection from a sample size of 385. Out of the sample size, only 222 questionnaires were returned for analysis. The data collected was analysed using both descriptive and inferential statistics. The result was statistically interpreted. The study revealed that the prevalence level of workplace-related problems among workers in Small and Medium enterprises is significantly high, there is a significant association between the levels of occupational hazards and workplace-related health problems, there is little or no Health Intervention Support among respondents in Small, Medium and large enterprises in Minna, Niger State. The study recommends among others that workers should be properly trained and educated on the use of work-related equipment to avoid health-related accidents. Public health preventative services such as the provision of flu vaccines, and protective equipment may be one way of supporting workers in small and medium enterprises with acute seasonal episodes of health problems.

KEYWORDS: Occupational health Hazards, Working Environment, intervention strategies, Minna

INTRODUCTION

The work environment of any enterprise is formed of factors that directly or indirectly influence the behaviour of employees. It absolutely or negatively affects the security of workers; but, the geographical point surroundings are usually unnoticed in the Federal Republic of Nigeria. The presence of hazards in any workplace could be a potential supply of danger with the chance of inflicting work connected

hazards to employees. Thus, for any organisation to realize success, it should initiate conduct hazard and risk assessment to fish out hazards that represent a risk to employees within the work surroundings. Several employees in developing countries like Federal Republic of Nigeria area unit exposed to 1 style of activity hazards or the opposite. operating place surroundings hazards area unit potential safety

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risks to employees with adverse consequences and so should be known and controlled to cut back the risks to As Low As Reasonably Possible (ALARP). The hazard of health issues face within the industrial setting is outlined because of the presence of fabric or condition that has the potential for inflicting loss or hurt.

Bello and Mijinyawa (2013) outlined work-related health issues because of the risk to the health of employees typically arising out of employment. Developing countries of the globe like the Federal Republic of Nigeria board impoverishment and sickness circles. industrial enterprise within the 50's/60's came as a hospitable method of breaking this circle of impoverishment and sickness, so the peasant's employee UN agency were subsistence farmers is aware of very little concerning fashionable ways of production became without delay obtainable, personnel for the industries; exposing them to diseases of varied occupations and hazards in this. The availability of activity health services could be a result of the belief on the part of management that a healthy employee could be a productive employee (Chineke, et al., 2016).

Scholars all over that the employees are also exposed to 5 differing types of hazards relying upon their occupation. These areas unit the physical, chemical, biological, mechanical, and psychological hazards. the risk could be a worldwide downside moving each developed and developing country. As a result of technological improvement in industrial hygiene, several harmful factors each chemical and physical that were extremely current within the early part of the commercial revolution are to an outsized extent controlled within the advanced countries. but developing countries and countries in transition face the standard activity hazards additionally to the widespread level of deficiency disease, poverty, and sickness bedeviling the realm (Nilima & Maya 2015, Chineke, et al., 2013, Hamid, 2018, Elenwo, 2018, Oluwafemi, et al., 2018).

Globally, there area unit over a pair of.9 billion employees UN agency area unit are exposed to activity risky risks at their workplaces (Asikhia, 2019). Kalejaiye (2013) according to that there has been AN annual fatality rate of one,249 per a hundred,000 employees in the Federal Republic of Nigeria. numerous kinds of hazards exist, nearly as various because of the different types of labor, together with chemicals, biological agents, and adverse engineering conditions. Yearly, there area unit 2 million deaths, arising from activity diseases and injuries and four-dimensional of Gross Domestic Product (GDP) is lost because of work connected

diseases and injuries. activity injuries gift a significant public ill-health leading to serious social and economic consequences that would be prevented if applicable measures area unit taken (Iden, 2016). Annually, across the globe, AN calculable 271 million folks suffer work-related injuries, and a pair of million dies from their injuries. The calculable economic loss caused by work-related injuries and sickness is appreciated four you look after the world's gross national product (Elenwo, 2018). The impact is ten to twenty times higher in developing counties together with the Federal Republic of Nigeria, wherever the best concentration of the world's personnel is found (Oluwafemi, et al., 2018, Teklit, 2016).

It has been determined that occupation hazards area unit injuries and diseases ensuing from events or exposures occurring within the operating surroundings. It results considerably in the worldwide burden of sickness and incapacity, and mortality among the working-age cluster. The incidence of injury and frequency of incidence area unit are determined by many factors. These embody the degree of exposure of employees to activity hazards, ignorance, certainty, lack or under-utilization of protecting devices, poor work/equipment interaction, and quality of instruments to physical and physiological characteristics of employees, psychosocial and environmental factors (Nilima & Maya 2015, Eziki, 2019). several authorities believe that work-related injuries result from a fancy interaction of multiple risk factors. Exposure to physical, mechanical, and chemical hazards and also the performance of unhealthy practices by employees area unit the leading causes of activity injuries.

Similarly, psychosocial factors, work organization, socio-demographic characteristics of employees, and environmental and social things area unit alternative potential risk factors The activity safety conditions in developing countries like the Federal Republic of Nigeria is worst off because of low concern for safety, lack of correct records, and poor rules and management Nigeria's statutory rules on industrial safety area unit mostly hereditary from British or yank codes. Most Nigerian employers pay pretense to safety management as a subject matter and too few area units are willing to act towards determination these issues. although each leader is obligated to guard staff and keep them wise concerning health and safety practices. However, the prevailing safety of management practices are known to be enfeebling, and the way these affect staff is of extensive priority to students (WHO, 2017). These conditions negatively impact the psychological and physical

health of the commercial employees (Agu, et al., 2016, WHO, 2017).

However, the importance of occupational hazards and safety practices is often overlooked. This is because the level of health and safety in Africa is low compared with the rest of the world. In Sub-Saharan Africa, public health problems of child mortality, malaria, water quality, and HIV/AIDS have overshadowed occupational health problems (Elenwo, 2018). According to available literature, risk factors resulting in injuries are present in every enterprise and among all occupations with industrial and agricultural workers having the highest risks. Governments in developing countries have apathy to work-related health and safety issues, and all the stakeholders, ranging from the management, workers, and government do not appreciate the problems that can be solved or mitigated through occupational safety and health (Olufunsho, et al., 2016; Aliyu & Saidu 2015). Accidents can cause many forms of disabilities; loss of manpower leading to decreased productivity and in severe cases may result in death (Agu, et al., 2016). The few companies in Nigeria that recognize health problems and safety are the big multinationals that are running the policies constituted in their parent countries of origin. Health hazards and safety practices are still in infancy in most indigenous organizations in Nigeria. There is a dearth of literature in the area of the factory and industrial health problems and risks and hazards among industrial workers in Nigeria and also limited studies among industrial workers in the northern part of Nigeria, and none in Niger state. This study, therefore, seeks to fill the gaps.

Empirical study linking industrial safety to well-being status in Niger state is scarce. Also, studies localized to the study of industrial hubs in the Nigerian hinterland are limited. Despite the voluminous studies elsewhere on this topic, there is a shortage of literature on the health problem among factory and industrial workers in the area under investigation. It is against this background that this study set to identify the health hazards in the working environment in Minna, Niger State, Nigeria for proper documentation. The specific objectives of the study are to determine the prevalence of workplace health hazards in the working environment in Niger State and to identify the health hazards common among workers in Minna, the state capital of Niger State.

Methodology

The study shall adopt a descriptive survey research design. This is a method of obtaining information about a population by interacting with only some people drawn from the population (Alubo, 2012). In

particular, the study shall adopt a cross-sectional survey design, which involves the collection of data from a sample at a single point in time. The population of this study comprised all workers who are currently working in small, medium, and large enterprises including part-time and full-time workers.

In attempting to select a representative sample size for the study, the sample size determination formula developed by Cochran (1963) was used. The source recommended the following sample size determination formula for populations; usually those between 10,000 to 100,000 in size:

$$n_0 = \frac{Z^2 pq}{e^2}$$

here:

n_0 = Required sample size.

Z = Standard normal deviate, usually set at 1.96, which corresponds to 95% confidence level.

p = Proportion of the population estimated to have a particular characteristic. When there is no reasonable characteristic, 50% (0.50) is used.

$q = 1.0 - p$

e = Desired level of precision, usually set at 0.05 or occasionally 0.03.

The size of the study population- of workers in working environment in Minna is greater than 10000. Thus, the formula is appropriate. Applying the formula, the sample size was:

$$\begin{aligned} n_0 &= \frac{Z^2 pq}{e^2} \\ &= \frac{(1.96)^2 (0.50)(1-0.50)}{(0.05)^2} \\ &= \frac{(1.96)^2 (0.50)(0.50)}{(0.05)^2} \\ &= 0.9604 \\ &= 0.0025 \\ &= 384.16 \\ &= 385 \text{ (Rule of integer)} \end{aligned}$$

Cochran's (1963) formula is preferred over others (Yamane, 1967; Krejcie & Morgan, 1970) because it does not necessarily require knowledge of exact population figure before a representative sample size could be calculated (Israel, 2013). The categories of samples outlined above were drawn using different techniques and procedures. A combination of the cluster, simple random, systematic random, and purposive sampling procedures were used to select the sample size.

This research relied heavily on primary data. Apart from the literature review, all other information was obtained from the field using a questionnaire as the main instrument. Accordingly, relevant statistical tools appropriate to the nominal, ordinal, and ratio scales of measurement will be used to analyse the data to achieve the research objectives. The recommended tools are simple percentages, mean, standard deviation, variance, regression analyses, and Fisher's test (Udofia, 2013). Analysis of quantitative data followed a 5-step procedure. First, all the questionnaires retrieved, and with valid responses were serialized, beginning from one to the end. Next, the responses were coded and fed into the SPSS software. This will be followed by the generation of appropriate results in line with objectives.

Ethical considerations

In the process of primary data collection and analysis, the researcher strived to ensure that global best practices in the conduct of scientific researchers are strictly adhered to. These include informed consent, respect for respondents' privacies, protection of

respondents' identities, avoidance of bias in sample selection, and strict adherence to scientific procedures in data analysis.

Result

A total of 385 copies of the questionnaire were distributed among respondents in Small and Medium and large enterprises in Minna, Niger State. A total of two hundred and twenty-two (222) duly completed and verified the questionnaire, representing 57% of the total number distributed, collected, and were used for data analysis. According to Babbie (2002) in descriptive research of this nature, a response rate of above 50% is adequate for analysis. Lending support to this assertion Mugenda and Mugenda (2003) also averred that a 50% response rate is adequate.

Demographic data

This study sought to establish the demographic data of the respondents. The results began with a general analysis of the demographic profile of the respondents which was composed of: gender, age bracket, marital status, highest educational qualification, working experiences.

Gender of the Respondents

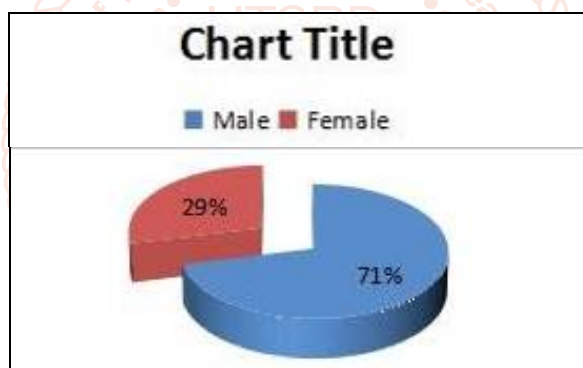


Figure 1: Gender of the Respondents

The data contained in Figure 1 shows the distribution of the research respondents, It reveals that 158(71%) of the respondents are males while 64(29%) are females. The conclusion is that majority of respondents in this research are males.

Age Bracket of the respondents

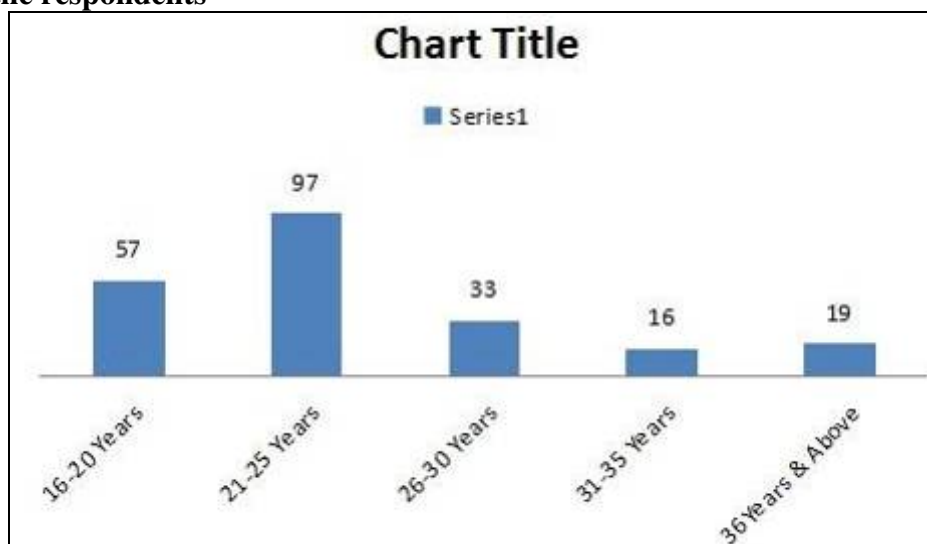


Figure 2: age brackets of the respondents.

Figure 2 displays the distributions of the respondents based on age groups. It shows that 57(26%) of the respondents belong to the 16-20 years bracket, 97(43%) are between 21-25 years, 33(15%) are between 26-30 years, 16(7%) are between 31-35 years while 19(9%) are from 36 years and above. The majority of the respondents are between 21-26 years age bracket.

Respondents Marital Status

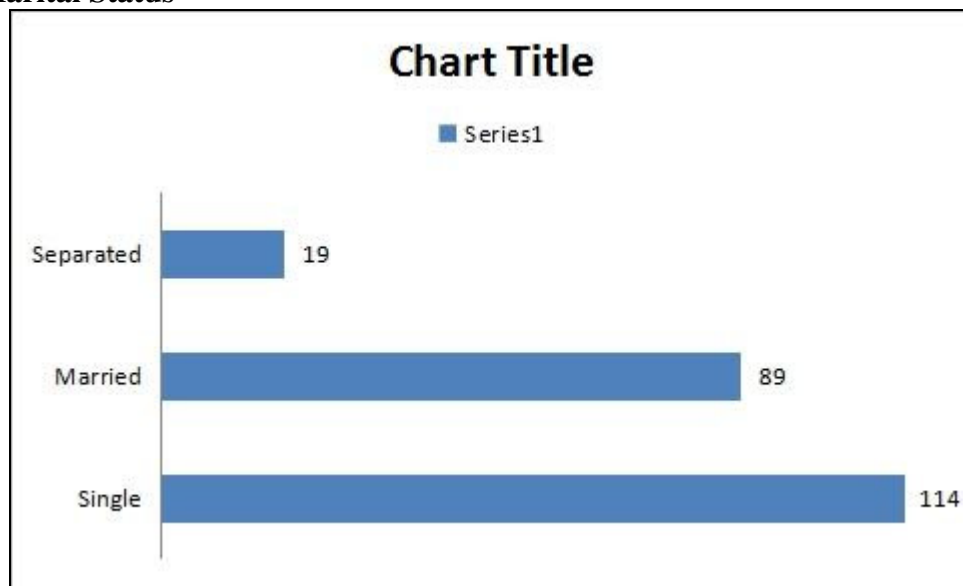


Figure 3: Respondents Marital status distribution

This data contained information on the marital status of the respondents. It shows that 114(51%) of the respondents are single, 89(40%) are married while 19(9%) are separated. The conclusion is that majority of the respondents in this research are single.

Respondents Educational Qualifications

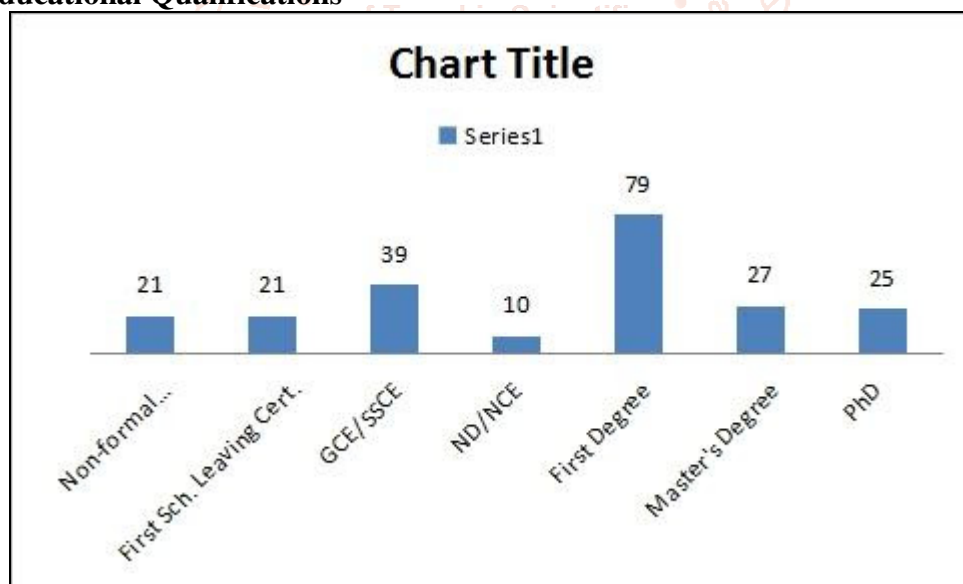


Figure 4: Distribution based on Educational Qualifications

Figure 4 shows the respondents' distributions based on educational qualifications. Twenty-one respondents (10%) had no formal education, 21(10%) had First School Leaving Certificate, 39(17%) obtained either GCE or SSCE, 10 (5%) bagged National Diploma/National Certificate in Education, 79 (35%) had First-degree certificates, 27(12%) had Master degree qualifications while 25(11%) bagged PhD qualification. It could be seen clearly that majority of the respondents had first degree in this study.

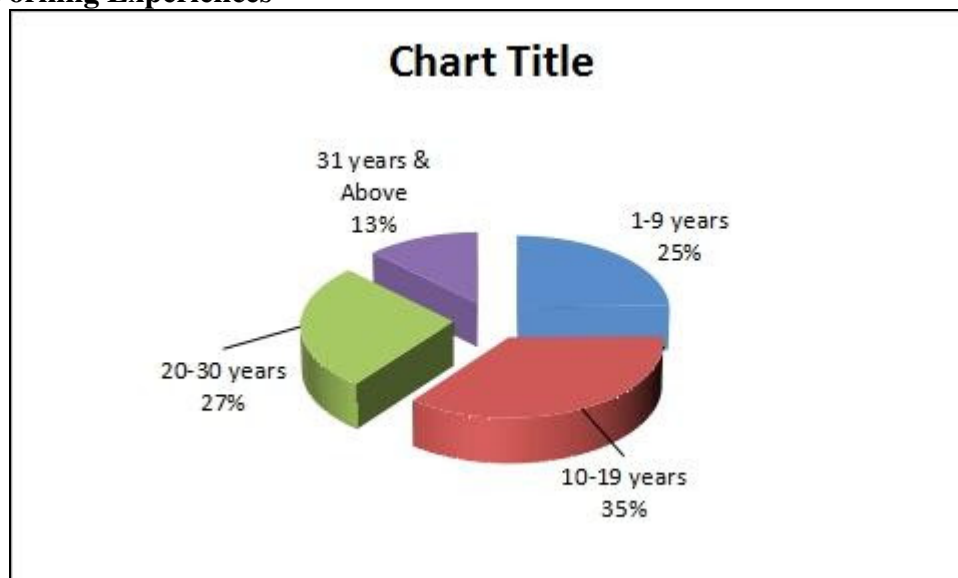
Respondents Working Experiences**Figure 5: Respondents Years of Working Experiences**

Figure 5 shows the distribution of the respondents' working experiences in working environment enterprises. It indicates that 55(25%) of the respondents had put in between 1-9 years of working experience, 79(36%) had put in between 10-19 years of working experience, 60(27%) had put in between 20-30 years while 28(13%) had put in 31 years and above as working experiences. The majority of the respondents had put between 10-19 years working in various working environment enterprises in the study area.

Table1: Responses of the respondents on Workplace-Related Health Hazards

NO	Items	M	SD	Remark
45	Muscles pains/problems	3.48	1.45	Agreed
46	Skin reactions/Allergy	3.30	1.40	Agreed
47	Chet tightness	3.54	1.35	Agreed
48	Back pains	3.51	1.19	Agreed
49	Stress-related issues	3.56	1.36	Agreed
50	Hearing problem due to excessive noise	3.62	1.34	Agreed
51	Neck pain	3.61	1.31	Agreed
52	Forearm pains	3.47	1.32	Agreed
53	Eye irritation/problem	3.66	1.32	Agreed
54	Excessive heat	3.60	1.34	Agreed
55	Abdominal/stomach pain	3.51	1.29	Agreed
56	Problem with hearing	3.53	1.26	Agreed
57	Job insecurity	3.59	1.27	Agreed
58	Increased blood pressure	3.47	1.32	Agreed
	Grand Mean	3.53	1.32	Agreed

Empirical data depicted in the table shows that the grand mean of 3.53 and SD of 1.32 are higher than the specified cut-off-point of 3, indicating the respondents have agreed on the Workplace-Related Health hazards among respondents in working environment enterprises in Minna, Niger State. Item by item analysis reveals item No 53 had the highest mean ($M=3.66$, $SD=1.32$), which eye irritation problem while item No 46 with the lowest mean score of 3.30 ($SD=1.40$) specifying skin reactions/Allergy as it relates to Workplace-Related Health Problems.

Health Intervention Support put in place by different working environment in Minna, Niger State**Table 2 Responses of the respondents on Health Intervention Support**

NO	Items	M	SD	Remark
33	There is provision of protective equipment for workers	2.89	1.52	Disagreed
34	There is conducive working environment for workers	2.55	1.40	Disagreed
35	There is health support programme for workers	2.32	1.33	Disagreed
36	In my working place, workers are made to do medical examination	2.04	1.18	Disagreed

37	There is provision for medical care for workers	2.00	1.23	Disagreed
38	Workers are provided health education	2.26	1.35	Disagreed
39	The medical care for workers is free	2.11	1.24	Disagreed
40	My working environment is being monitored	2.13	1.28	Disagreed
41	I use hand gloves while working	2.32	1.36	Disagreed
42	I wear a protective cap (helmet) when working	2.13	1.25	Disagreed
43	I often put face and nose masks when working	2.46	1.41	Disagreed
Grand Mean		2.29	1.32	Disagreed

Analyzed research data contained in Table 4.6 shows that the grand mean of 2.29 and SD of 1.32 is lower/smaller than the specified cut-off-point of 3, indicating the respondents have disagreed on the Health Intervention Support among respondents in the working environment in Minna, Niger State. Item by item analysis reveals item No 33 had the highest mean ($M=2.89$, $SD=1.52$), which states that there is the provision of protective equipment for workers while item No 37 with the lowest mean score of 2.00 ($SD=1.23$) which states that there is provision for medical care for workers as it relates to the health intervention support.

Inferential Statistics

Hypothesis One: The prevalence level of workplace-related problems among workers in working environment enterprises will not be significantly high in Niger State.

In testing the first null hypothesis, the variable of interest is the prevalence level of workplace-related problems among workers in working environment enterprises, measured by 14 items. The respondents' scores on the scale were summed up. For the prevalence level of workplace-related problems among workers in working environment enterprises to be considered significantly high, the scores made on the whole scale should be significantly higher/greater than 42 (which is the midpoint between strongly agree and strongly disagree). This implies 3×14 , the number of items measuring the construct. This null hypothesis was tested with a one-sample t-test) otherwise called population t-test). The results are presented in Table 4.8.

Table3 Population t-test analysis of whether prevalence level of workplace-related problems among workers in the working environment will not be significantly high in Minna, Niger State.

Variable	Sample Mean	Sample SD	Ref. Mean	T	Sig	Remark
Prevalence level of workplace-related problems	52.36	10.06	42	15.34	<.001	Sig.

A look at the results indicated a statistically significant high prevalence level of workplace-related problems among workers in working environment enterprises among the respondents ($M=52.36$, $SD=10.06$), $t(221) = 15.34$, $P < .001$. With these results, the first null hypothesis is hereby not supported and hence rejected for the alternative. This implies that the prevalence level of workplace-related problems among workers in working environment enterprises is significantly high in Minna, Niger State.

There is no significant association between the level of occupational risk and workplace-related health problems among workers in working environment enterprises in Minna, Niger State.

Table 4: Pearson Correlation analysis of the relationship between the level of occupational hazards and workplace-related health problems

Variable	N	Mean	SD	R	P	Remark
Level of Occupational risk	222	31.41	7.21	.540**	<.001	S
Workplace-related health problems	222	52.36	10.06			

**Correlation is significant at the .01 level (2-tailed)

The Pearson Product Moment Correlation Coefficient technique was utilized in determining the relationship between the level of occupational and workplace-related health problems among workers in the working environment in Minna, Niger State. The results reveal a strong and positive correlation between the two variables, $r(220) = .540$, $p < .001$, leading to the non-support of the hypothesis. It is then implied that there is a significant association between the levels of occupational risk and workplace-related health problems. In other words, the higher is the level of occupational risk confronting a worker, the higher will be the probability of workplace-related health problems among such workers.

Hypothesis Five: There is no significant relationship between intervention support strategies and workplace-related health problems among workers in working environment enterprises in Niger State.

Table 5: Pearson Correlation analysis of the relationship between intervention support strategies and workplace-related health problems

Variable	N	Mean	SD	R	P	Remark
Intervention support strategies	222	25.41	7.79	-.162**	<.001	S
Workplace-related health problems	222	52.36	10.06			

**Correlation is significant at the .01 level (2-tailed)

In testing the five hypotheses, the Pearson Product Moment Correlation Coefficient technique was used. Considerably, the results reveal a weak and negative correlation between the two variables, $r(220) = -.162$, $p < .001$, leading to the non-support of the hypothesis. It is then implied that there is an indirect or negative significant association between the intervention support strategies and workplace-related health problems. In other words, the lower is the intervention support strategies a worker receives, the higher will be the probability of workplace-related health hazards and vice versa.

Discussion

The finding of the study that seeks to find the answer to the above question revealed that the types and nature of work they do have a significant influence on the health-related problem among workers in Niger state. The hypothesis tested here also supports that the prevalence level of workplace-related problems among workers in the working environment in Minna is significantly high in Niger State. This finding tallies with Nilima and Maya (2015) who found that the industrial environment affects workers' health through exposure to physical, chemical, biological, and ergonomic hazards. Through assessment of industrial workers, it has been found that most of the workers were suffering from allergic reactions breathing problems, asthma, swelling in their legs or feet, eye irritation, skin allergies or rashes, headache, general weakness or fatigue due to overload of work, muscular pain, high and low blood pressure. However, this research was conducted among industrial workers not Small and Medium-scale workers. Similarly, the finding is in tandem with Ismaila, et al., (2011) who averred that factory workers, especially those unskilled, undertake activities that involve lifting, pushing, pulling, carrying, standing, bending, and stooping. These activities can create occupational hazards such as MSIs. They opined that almost 41% of the respondents studied sustained two or more MSIs from work-related activities. This was due to maintaining prolonged awkward position and poor lifting technique as in the present population of the study. Onawumi, et al., (2016) also revealed that Poor work postures such as bending, twisting, overreaching, kneeling, under the hazardous environment of heat, noise, smoke, dust, and optical radiation were identified as hindrances to effective operation. Some work-related environmentally induced hazards were unveiled through the survey which was characteristic of manufacturing processes employed and the state of the workplace.

The finding of the study revealed that the intervention strategies for preventing and addressing occupational hazards in Minna were very poor. This means that workers were not well-taken care of as such there were increase health hazards among the workers. In other words, the higher is the level of occupational risk confronting a worker, the higher will be the probability of workplace-related health hazards among such workers. The finding of the study also corresponded with Iden and Okojie (2015) who observed that the few companies in Nigeria that recognize occupational health and safety are the big multinationals organizations that are running the policies constituted in their parents' countries of origin, as the present Nigerian Bottling Company. However occupational health and safety practices are still in infancy in most indigenous organizations in Nigeria. This statistically implies that there is an indirect or negative significant association between the intervention support strategies and workplace-related health problems. In other words, the lower is the intervention support strategies a worker receives, the higher will be the probability of workplace-related health problems and vice versa. The finding disagrees with that of Similarly, Tolin, et al., (2019) who examined the implementation of safety hazards and risk control measures in the CHI. Results showed that 87% of the respondents agreed that they have received in-service training on safety hazards and risk in the last two years; 93% confirmed attending conferences, workshops, and seminars; 84% agreed that management provides workers with operating safety manuals; 78% consented that supervisors usually conduct safety hazards and risk briefing with workers each day before the start of work; 89% agreed that management carries out yearly in-house safety training for workers; 86% concurred that management sponsors staff for external training programmes on safety hazards and risk; 94% confirmed that management provides Personal Protective Equipment (PPE) for workers; while 99%

confirmed that they make use of PPE issued to them. All the respondents (100%) confirmed that they usually follow safe work procedures while carrying out their duties; 73% agreed that management usually carries out prompt repairs of damaged equipment and electrical systems; while 86% confirmed that they often make use of Material Safety Data Sheets (MSDS) when handling chemicals. The difference in the finding might be that Tolin's study was on large-scale industries leaving out small one that this study focuses on. That is why Iden and Okojie observed that the few companies in Nigeria that recognize occupational health and safety are the big multinationals organizations that are running the policies constituted in their parents' countries of origin, as the present Nigerian Bottling Company. However occupational health and safety practices are still in infancy in most indigenous organizations in Nigeria.

Conclusion

It can be deduced from the study that the workers in the small and medium enterprises are exposed to work that requires high concentration such as cutting, stitching, and finishing which causes headache and visual discomfort. The workers also receive low income to survive and spend a majority of their time in the factory. They find it difficult to buy the required calories and to cook food. For this reason, they choose to take unhygienic foods which cause various types of health problems like food poisoning, diarrhea, gastric pain, malnutrition, abdominal pain, etc. A study found that workers suffer from some health problems like malnutrition, less appetite, diarrhea, hepatitis (jaundice), food poisoning, and so on, which are related to the food they usually take.

Recommendations

1. The industrial safety situation in developing countries like Nigeria is worst off due to low concern for safety, lack of accurate records, and poor regulations and control of Nigeria's statutory regulations on industrial safety. Most Nigerian employers pay lip service to safety management as a subject and too few are willing to act towards solving these problems. Even though every employer is duty-bound to protect employees and keep them informed about health and safety practices. Workers should be properly trained and educated on the use of work-related equipment to avoid health-related accidents.
2. Public health preventative services such as the provision of flu vaccines, and protective equipment may be one way of supporting workers in small and medium enterprises with acute seasonal episodes of health problems.

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